

LISTING AND AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of optical signal regeneration comprising the steps of:

generating a phase and amplitude encoded clock signal from using at least an one input optical signal and a clock signal;

introducing the encoded clock signal into a delay interference section of the regenerator such that an amplitude modulated clock signal is produced; and

outputting the amplitude modulated clock signal wherein the output amplitude modulated clock signal preserves information present within the input optical signal wherein the use of the clock signal allows retiming of the at least one input optical signal.

2. (Original) The method according to claim 1 wherein said delay interference comprises the steps of: N

splitting the encoded clock signal into at least two optical signals; and

delaying one of the encoded signals by an amount Δt from another signal wherein $\Delta t \geq N * \Delta t_{clk}$, where Δt_{clk} is a clock pulse time delay measured between subsequent clock signal pulses and N is an integer.

3. (Original) The method according to claim 2 further comprising the steps of:

optically amplifying the amplitude modulated clock signal.

4. (Original) The method according to claim 2 further comprising the steps of::

polarizing the amplitude modulated clock signal.

5. (Original) The method according to claim 2 wherein the delay interference section includes a bi-refringent fiber in optical communication with a phase shifter.

6. (Original) The method according to claim 5 wherein the delay interference section further includes a polarizer in optical communication with the phase shifter.

7. (Currently Amended) The method according to claim 1 wherein the generating step further includes the steps of:

applying the input optical signal to a coupling section of an optical regenerator; and

applying ~~a~~ the clock signal to a modulation section of the optical regenerator.

8. (Original) The method according to claim 7 wherein said coupling section comprises a photodiode.